WHAT IS CLAIMED IS:

1. A method for use in a radio receiver comprising the steps of:

estimating a channel impulse response for a received signal containing plural paths, each path having a corresponding path delay;

calculating a mean delay for the estimated channel impulse response (CIR) using plural path delays;

determining a delay error between the mean CIR delay and a desired delay position; and

determining an adjustment signal to reduce the delay error taking into account a Doppler effect associated with the received signal.

2. The method in claim 1, wherein a CIR search window defines a delay profile that contains the plural paths of the received signal.

3. The method in claim 2, further comprising:

determining a Doppler frequency for the received signal;

using the Doppler frequency to determine a shifting rate of the search window; and

using the shifting rate in determining the adjustment signal.

4. The method in claim 3, further comprising:

determining a maximum Doppler frequency for the received signal.

5. The method in claim 4, wherein the shifting rate is expressed as a minimum dwell time (MDT).

6. The method in claim 5, further comprising:

calculating the adjustment signal using the error and the MDT.

7. The method in claim 6, wherein the adjustment signal is an MDT-times, downsampled version of the error signal.

8. The method in claim 6, wherein the adjustment signal is an average of the error signal over an averaging length that depends on the MDT.

9. The method in claim 2, further comprising:

selecting optimal ones of the plural paths based on the estimated channel impulse response;

demodulating each of the selected paths based on its corresponding delay; and

combining the demodulated paths to generate a demodulated received signal.

10. The method in claim 2, the calculating step further comprising processing path delays and powers corresponding to the selected paths to determine the mean delay in accordance with the following:

$$mean\_delay = \frac{\sum_{k=1}^{N} \tau'_k \cdot P_k}{\sum_{k=1}^{N} P_k}, \text{if} \sum_{k=1}^{N} P_k > 0,$$

where N is the number of selected paths, $\tau'_k \in (0, 1, \ldots, N_{window-1})$ are path delays, and P_k are the corresponding path powers.

11. The method in claim 1, further comprising:

adjusting delays for selected paths using the adjustment signal.

12. The method in claim 1, wherein the Doppler effect associated with the received signal is predetermined based on certain assumptions.

13. The method in claim 1, wherein the Doppler effect associated with the received signal is estimated based on a measurement of the received signal.

14. In a radio receiver receiving from each of plural cells a signal transmitted from a transmitter containing plural paths, each path having a corresponding path delay, a method comprising the steps of:

for each cell, estimating a channel impulse response (CIR) for the received signal using a channel estimator;

defining an associated search window for each channel estimator, where each search window defines a delay profile containing plural paths of the received signal;

selecting optimal ones of the plural paths from the delay profiles;

calculating a mean delay from the selected paths;

determining a delay error between the calculated mean delay and a desired delay; and

calculating an adjustment signal to reduce the delay error taking into account a relative movement between the receiver and the transmitter.

15. The method in claim 14, further comprising:

determining a Doppler frequency for the received signal;

using the Doppler frequency to determine a shifting rate of the search window; and

using the shifting rate in determining the adjustment signal.

16. The method in claim 15, wherein the Doppler frequency is predetermined based on certain assumptions.

17. The method in claim 15, wherein the Doppler frequency is estimated based on a measurement of the received signal.

18. The method in claim 15, further comprising:
determining a maximum Doppler frequency for the received signal.

19. The method in claim 18, wherein the shifting rate is expressed as a minimum dwell time (MDT).

20. The method in claim 19, further comprising:
calculating the adjustment signal using the error and the MDT.

21. The method in claim 20, wherein the adjustment signal is an MDT-times, down-sampled version of the error signal.

22. The method in claim 21, wherein the adjustment signal is an average of the error signal over an averaging length that depends on the MDT.

23. The method in claim 14, further comprising:
modulating each of the selected paths using its corresponding delay; and
combining the demodulated paths to generate a demodulated received signal.

24. The method in claim 14, further comprising:
adjusting delays for selected paths using the adjustment signal.

25. A search window tracking unit for use in a radio receiver receiving a transmitted signal having plural paths, comprising:

a processor configured to receive delay and magnitude values associated with selected paths of the received signal and determine a position of a channel impulse response (CIR) corresponding to the selected paths;

a controller configured to determine a position of a search window used to locate the channel impulse response that takes into account a Doppler effect on transmitted signals.

26. The search window tracking unit in claim 25, wherein the Doppler effect is predetermined based on certain assumptions.

27. The search window tracking unit in claim 25, wherein the Doppler effect is estimated based on a measurement of the received signal.

28. The search window tracking unit in claim 25, wherein the controller includes:

an error detector configured to determine an error between the CIR position and a position of a search window used to locate the channel impulse response, and is further configured to generate an adjustment signal to reduce the error taking into account a relative movement between the receiver and a transmitter of the transmitted signal.

29. The search window tracking unit in claim 28, wherein the processor is further configured to:

estimate a Doppler frequency for the received signal;

use the Doppler frequency to determine a shifting rate of the search window; and

use the shifting rate in determining the adjustment signal.

30. The search window tracking unit in claim 29, wherein the processor is further configured to:

estimate a maximum Doppler frequency for the received signal.

31. The search window tracking unit in claim 30, wherein the maximum Doppler frequency is expressed as a minimum dwell time (MDT).

32. The search window tracking unit in claim 31, wherein the controller is further configured to calculate the adjustment signal using the error and the MDT.

33. The search window tracking unit in claim 31, wherein the controller is further configured to calculate the adjustment signal as an MDT-times, down-sampled version of the error signal.

34. The search window tracking unit in claim 31, the controller further configured to calculate the adjustment signal as an average of the error signal over an averaging length or period that depends on the MDT.

35. The search window tracking unit according to claim 34, wherein the averaging period is MDT frames.

36. The search window tracking unit according to claim 35, wherein the averaging period is limited for high Doppler frequencies, low Doppler frequencies, or both.

37. The search window tracking unit according to claim 25, wherein the controller is further configured to determine a mean position of the channel impulse response (CIR) and the error detector is configured to determine the error as a difference between the mean CIR position and the position of the search window.

38. The search window tracking unit according to claim 25, further comprising:

a limiter configured to limit the adjustment signal.

39. A radio base station comprising:

one or more cells, each of the one or more cells having one or more antennas receiving a signal from a mobile station containing multiple paths, each path having a corresponding delay;

a Doppler frequency estimator configured to estimate a Doppler frequency;

a multipath search processor including:

a channel estimator for each of the one or more cells, each channel estimator configured to estimate a channel impulse response (CIR) for the received signal and generate a delay profile within a CIR search window;

a path selector configured to select paths from the delay profiles generated by each channel estimator and generate a delay and a magnitude for each selected path; and

a window tracking unit configured to maintain alignment between the CIR for each channel estimator and a target position of the channel estimator's corresponding search window using the estimated Doppler frequency; and

a demodulator configured to demodulate the selected paths and combine the demodulated paths into a combined received signal.

40. A radio base station in claim 39, wherein the estimated Doppler frequency is an estimate determined from the received signal.

41. The radio base station in claim 39, wherein the estimated Doppler frequency is predetermined based on certain assumptions.

42. The radio base station in claim 39, wherein the window tracking unit is configured to adjust the search windows to maintain the alignment and adapts the delays for the selected paths according to the adjustment to the search windows.

43. The radio base station in claim 39, wherein each cell includes two diversity antennas and the base station further comprises a cell selector for selecting one of the diversity antennas.

44. The radio base station in claim 39, wherein each search window is defined by N delay intervals corresponding to a number of sampling intervals and the window tracking unit is configured to calculate a mean delay from the selected paths, determine an error between the mean delay and the target window position,

and generate an adjustment signal used to shift each of the search windows to reduce the error.

45. The radio base station in claim 44, wherein the window tracking unit is configured to generate the adjustment signal using the error and a maximum Doppler frequency determined from the estimated Doppler frequency.

46. The radio base station in claim 45, wherein the maximum Doppler frequency is expressed as a minimum dwell time (MDT).

47. The radio base station in claim 46, wherein the window tracking unit is further configured to calculate the adjustment signal using the error and the MDT.

48. The radio base station in claim 47, wherein the window tracking unit is further configured to calculate the adjustment signal as an MDT-times, down-sampled version of the error signal.

49. The radio base station in claim 47, wherein the window tracking unit is further configured to calculate the adjustment signal as an average of the error signal over an averaging length that depends on the MDT.

50. The radio base station in claim 49, wherein the averaging length is limited for high Doppler frequencies, low Doppler frequencies, or both.

51. The radio base station in claim 44, wherein the window tracking unit is further configured to limit the adjustment signal.